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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,463	09/27/2001	Naoya Nakanishi	NOK-010	9557

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EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 07/17/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/963,463

Applicant(s)

NAKANISHI ET AL.

Examiner

Tracy Dove

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/27/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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## DETAILED ACTION

### *Priority*

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Information Disclosure Statement*

The information disclosure statement (IDS) submitted on 12/27/01 has been considered by the examiner.

### *Claims Analysis*

Claim 1 recites "a lithium-nickel-cobalt-manganese composite oxide represented by the formula  $\text{LiNi}_{(1-x-y)}\text{Co}_x\text{Mn}_y\text{O}_2$  where  $0.5 < x+y < 1.0$  and  $0.1 < y < 0.6$ ". However, it is possible for "x" to be zero in which case the active material would not comprise a lithium-nickel-cobalt-manganese composite oxide. Thus, claim 1 will be interpreted such that "x" is greater than zero while satisfying the limitation " $0.5 < x+y < 1.0$ ". Specifically, the claim recitation "lithium-nickel-cobalt-manganese composite oxide" indicates that cobalt is present.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numata et al.,

WO 00/13250.

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Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numata et al., EP 1 117 145 A1.

Note WO 00/13250 is a Japanese language document. EP 1 117 145 is an English language equivalent of WO 00/13250 as represented by the Derwent printout that shows the two documents are members of the same patent family (printout attached). Thus, the European patent will be used to discuss the teachings of both WO 00/13250 and EP 1 117 145.

Numata teaches a nonaqueous electrolyte solution secondary battery comprising a positive electrode active material including (A) a lithium manganese composite oxide and (B1) at least one lithium-nickel composite oxide. The lithium-nickel composite oxide may be represented by the formula  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  wherein  $0 < x \leq 0.5$  and M is at least one metal element selected from a group consisting of Co, Mn, Al, Fe, Cu and Sr (see abstract). As the lithium manganese composite oxide,  $\text{LiMn}_2\text{O}_4$  having a spinel structure is preferable (page 6, lines 19-24). In the lithium-nickel composite oxide represented by the formula  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$ , M may be two or more dope metal elements as long as the sum of the composition ratios of the dope metal elements is x (page 7, lines 33-40). Cobalt is a preferred dope metal (page 7, line 41). Numata teaches in the lithium-nickel composite oxide represented by the formula  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$ , M may be two dope metals Co and Mn (page 19, lines 36-41).

Regarding claim 2, the weight ratio between the [lithium-manganese composite oxide]:[lithium-nickel composite oxide] equals  $(100-a):a$ , wherein a is preferably  $3 \leq a \leq 45$  (page 5, lines 20-21).

Regarding claim 3, the particle diameter of the lithium-manganese composite oxide is 5-30  $\mu\text{m}$  as a weight average particle diameter (page 6, lines 25-27). The lithium-nickel composite

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oxide has a particle diameter of not more than 40  $\mu\text{m}$  and not less than 1  $\mu\text{m}$  (page 7, lines 50-55).

Numata does not explicitly teach that the sum of the composition ratios of the dope metal elements "x" may be greater than 0.5 (as required by the claimed invention).

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.) See MPEP 2144.05. A skilled artisan would have expected  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  having a total dopant composition ratio "x" slightly above 0.5 to have the same properties of  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  having a total dopant composition ratio "x" of  $0 < x \leq 0.5$  where the dopant elements consist of cobalt and manganese.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kazuhara et al., JP2002-100358 teaches a lithium battery comprising a positive active material including a mixture of a lithium-nickel-manganese-metal complex and a lithium-

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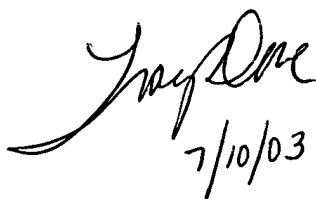
manganese spinel complex (abstract). Note Kazuhara is not available as prior art against the present invention.

Pynenburg et al., US 5,429,890 teaches a lithium cell comprising a physical mixture of  $\text{Li}_x\text{Mn}_2\text{O}_4$  (spinel) and at least one of lithium nickel oxide, lithium cobalt oxide or lithium nickel cobalt oxide (abstract and col. 7, line 1).

Mayer, US 6,007,947 teaches a positive electrode material including a lithium nickel cobalt metal oxide together with a lithium manganese metal oxide (abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).

Tracy Dove  
Patent Examiner  
Technology Center 1700  
Art Unit 1745



7/10/03